Institute of Engineering and Management of Grenoble Alpes University

Grenoble INP - UGA is a member of **international** engineering and management education and research **networks.** It is widely recognized in national and international rankings**.**

8 schools + **39** laboratories
8 300 students
1 300 teaching, research, administrative and technical staff

Grenoble INP-UGA is a renowned public institution of higher education and research, and a major player in the Grenoble ecosystem. It is the engineering and management institute of Grenoble Alpes University, and plays a leading role in the scientific and industrial community.

University Professor Position

Short profile	Data Science for Production Systems
Body	University Professor
Position number	27 PR 0541
CNU Section	27
Location	Grenoble INP - School of Industrial Engineering, G-SCOP Laboratory
Date of recruitment	01/09/2023
Key words	Data Science; Production Systems; Optimization; Decision Support; Machine Learning; Prescriptive Analysis

Grenoble INP - UGA is a leading public institution accredited with the French label “Initiative d’excellence”. It offers innovative engineering and management programs, with an increasing internationalization of its course offers. The courses are grounded in sound scientific knowledge and linked to digital, industrial, organizational, environmental and energy transitions. The Engineering and Management Institute of Université Grenoble Alpes brings together more than 1300 staff members (teacher-researchers, lecturers, administrative and technical staff) and 8300 students, located on 8 sites (Grenoble INP - Ense3, Grenoble INP - Ensimag, Grenoble INP - Esisar, Grenoble INP - Génie industriel, Grenoble INP - Pagora, Grenoble INP - Phelma, Polytech Grenoble, Grenoble IAE and the INP Prepa). Grenoble INP is also a highly-ranked institution of higher education and research, leading the way in the fields of engineering and management on an international scale. It is a member of a large number of international academic and research networks. It is part of the European University UNITE!.

As part of Université Grenoble Alpes, Grenoble INP has associated guardianship of 40 national and international research laboratories and of technological platforms. The research conducted there benefits both its socio-economic partners and its students. Grenoble INP is at the heart of the following scientific fields: physics, energy, mechanics and materials; digital; micronanoelectronics, embedded systems; industry of the future, production systems, environment; management and business sciences.

Grenoble INP - UGA is an equal opportunity employer committed to sustainability. Grenoble INP - UGA celebrates diversity and equity and is committed to creating an inclusive environment for all employees. All qualified applications will be considered without discrimination of any kind.

Teaching

School : Grenoble INP – Génie industriel (Industrial Engineering)

School website: https://genie-industriel.grenoble-inp.fr/

Contact: daniel.brissaud@grenoble-inp.fr, Director of Grenoble INP – Génie industriel (Industrial Engineering)

Grenoble INP – Génié industriel (Industrial Engineering) trains engineers and managers in industrial engineering for the design and management of supply chains and products in every sector of the economy. By combining skills in engineering sciences, data science, and human and social sciences, the School of Industrial Engineering trains talented individuals who master the fundamentals of sciences for industry, with soft skills that enable them to transform industry for the benefit of society.

Teaching Profile:

With the advent of Industry 4.0 and the transition to increasingly digitized businesses, it has become essential for an industrial engineer to be able to incorporate knowledge from the available data in order to make the right decisions in increasingly complex systems. We therefore wish to consolidate our training offer in Data Science and Machine Learning for decision support, and more particularly in the combined contributions of Data Science and engineering tools for decision support and optimization for industrial systems that must be efficient, agile, robust and resilient.

The new professor will thus be expected to join the teams working in the fields of Data Science for the modeling and optimization of production systems of goods and services. She or he will contribute to the creation of new courses and to the pedagogical animation of the team. He or she will also be in charge of industrial engineering courses such as applied mathematics, probability or statistics, and will be integrated into the teaching teams around courses in data analysis, machine learning, optimization, decision support, computer science or production management and supply chain design.

The candidate will have to master Data Science tools and have some knowledge in optimization and decision support. She or he will be expected to offer courses that will allow students to understand the complementarities between the two fields, such as the interest of combined approaches, and to acquire a mastery of the tools for implementation in an industrial context. A part of these courses may be taught in English.

Research

Team : GROG (Groupe Recherche Opérationnelle de Grenoble), G-SCOP Laboratory UMR 5272

Laboratory website: https://g-scop.grenoble-inp.fr/

Contact : peggy.zwolinski@grenoble-inp.fr, Director of G-SCOP

The G-SCOP Laboratory (UMR 5272) is a multidisciplinary research laboratory addressing the issues of design, optimization and management of products and production systems. The G-SCOP Laboratory is committed to

developing research that responds to the societal challenges posed by the four transitions: energy, environment, digital and industrial. To meet the challenges related to these major societal issues, the need to develop optimization methods combining Optimization/Decision Support and Data Science is increasingly important and promising. Grenoble's environment in terms of data analysis, processing and use is very dynamic. Several laboratories and companies are developing research and collaborating in this area, and the MIAI Artificial Intelligence Institute is the most notable example. As a stakeholder in this institute, the G-SCOP Laboratory holds the Chair "AI for data-driven and self-configurable supply chains".

The research of the GROG team (Grenoble OperationsResearch Group) of the G-SCOP Laboratory focuses on theoretical work related to optimization and decision support tools and Mathematical and Constraint Programming models, as well as on applied problems. The team has a strong expertise in modeling and optimization of production systems (in the broadest sense) of goods and services and of logistics and transportation systems. As for tools, it works on the improvement and evolution of optimization solvers (Integer Linear Programming, Constraint Programming). It develops resolution approaches, often algorithmic, based on robust optimization, graph theory, data science and complexity theory. Developing the Optimization/Decision Support and Data Science axis is a priority for the GROG team. A University Lecturer has already been recruited in this field in 2022. Applied or fundamental research based on the interaction between Optimization/Decision Support and Data Science is already conducted within the GROG team. Several academic theses or theses with an industrial partnership are in progress. A University Professor in charge of the Optimization/Decision Support and Data Science axis is needed to lead and coordinate this new research axis.

Research profile:

The evolution of business and society and the increasing profusion of available data have led to the emergence of new research fields, in particular the integration of data for the adaptation and validation of models in optimization, and conversely optimization at the service of data. Considerable amounts of data are now available, but the real scientific challenge is to use them in an efficient and adequate way. Retrieving adequate data, reconciling and analyzing them in order to integrate them effectively in a practical context of optimization and decision support is a real challenge.

The successful candidate will join the GROG team of the G-SCOP Laboratory. He/she will have proven skills in Data Science and Optimization/Decision Support, and will be open to their reciprocal integration in the context of various applications in production systems (in the broadest sense) of goods or services and in logistics and transportation systems.

She/he will develop, lead and facilitate projects combining data analysis and optimization in order to meet the challenges of performance and explicability of decisions in the context of modeling and optimization of complex systems in various applications (health, local logistics, industry 4.0, circular economy, etc.). The successful candidate will develop and initiate research on data-driven and/or model-driven analysis and optimization of complex systems. She/he will develop processing and analysis methods that make it possible to identify, from real data from various production systems or organizations, the parameters influencing the phenomena in order to provide adequate decision support for the design or operation of these systems. She/he will also conduct exploratory research on the contribution of Optimization to Data Science.

The chosen candidate will launch federative projects combining Optimization/Decision Support and Data Science, allowing the involvement of different members of the team specializing in Operations Research and/or Data Science. She/he will rely on the richness of the local network on these themes to develop national and international collaborations on the reciprocal integration of Optimization/Decision Support and Data Science.

Position assigned in a restricted area: YES/<u>NO</u>

(Protection of the scientific and technical potential of the nation, conditioning the appointment of the lecturer-researcher to the authorization of the Defense Security Officer).

Specific requirements or conditions

None.

How to apply

Applicants must submit their applications on the Galaxie Platform of the French Ministry of Higher Education and Research from the 23rd of February 2023, 10 a.m. (Paris time) to the 30th of March 2023, 4 p.m. (Paris time), deadline.

Any document sent outside the Galaxie procedure will not be taken into account.

The interview will include simulation/situational exercises. The details will be communicated when the invitation is sent out. In addition, part of the interview may be conducted in English.